

11. SCARABUS PYRAMIDATUS, Nobis, n. s.

The *Scarabus pyramidatus* is the most oblong of the different forms; the mouth is of a yellowish colour and highly enamelled. (Fig. 12.)

I am indebted to the Rev. Mr. Stainforth and Wm. Walton, Esq., for the use of the specimens which have furnished the foregoing notices.

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XXVII.—*The Birds of Ireland.* By WM. THOMPSON, Esq.,
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[Continued from p. 145.]

No. 12. *Families Cuculidæ, Meropidæ, Halcyonidæ.*

THE CUCKOO, *Cuculus canorus*, Linn., is well known throughout Ireland as a regular spring visitant.

It has been remarked by Sir Wm. Jardine and Mr. Macgillivray, with respect to Scotland, that localities of almost every character are visited by this bird, and so it is in Ireland, the wild and treeless wastes on different portions of the western coast equally attracting it with the most highly cultivated and best wooded districts. It was remarked by Mr. R. Ball, when visiting the largest of the South Islands of Arran (near the entrance to Galway Bay), in company with the late lamented Dean of St. Patrick's, in June 1835, that cuckoos were particularly abundant:—the whole surface of the island is either rocky or covered with a short rich pasture, and is altogether destitute of trees, except at one spot, where some half-dozen appear.

The vernal appearance of the cuckoo in the north of Ireland is as early as some authors report it to be in the south of England. My notes bear witness to its arrival in the neighbourhood of Belfast in seven consecutive years—from 1832 to 1838—as follows: April 16th, 20th, 21st, 10th, 22nd, 26th, 30th,—and on the 23rd in 1840*. The adult birds generally leave the north of the island at the end of June: on the 1st July 1832 I saw two, and heard their call, near Dunfanaghy, in the north-west of the county of Donegal. The stay of the cuckoo was remarkably prolonged in 1838,—in which year the period of their arrival was also later than ever known—one having been heard at “The Falls” near Belfast on the 7th July. The young birds of the year generally remain till towards the end of August; so late as the 27th of which month they have been observed in the county of Antrim. The Bishop of Norwich, in his ‘Familiar History of Birds,’ records an instance of about forty cuckoos being congregated in a garden in the county of Down from the 18th to the 22nd

* In McSkimmin's ‘History of Carrickfergus’ (1823) it is remarked that—“During 20 years’ observation the earliest it has been heard calling was the 17th of April, and the latest the 30th of June.”

of July, and with the exception of one or two, which were smaller than the rest, taking their departure at that time. It is not stated whether they were adult or immature birds, and the time mentioned is between the periods of departure of the old and young; but from one or two remarks made, the inference is, that the latter are alluded to. My only note upon migration is in connexion with the same county; an adult bird having been shot at the migratory period a few years ago when flying singly and in a southerly direction over the sea, about two miles off Dundrum.

The singular economy of the cuckoo in depositing its eggs in the nests of other birds has been very fully treated of, from personal observation, by the celebrated Dr. Jenner*, Mr. Blackwall†, Mr. Weir‡, and others. I have not anything novel to offer on the subject, but will introduce a few observations made in Ireland. In the north of the island, as in Scotland§, the nest of the titlark (*Anthus pratensis*) seems generally to be the receptacle of the cuckoo's egg. George Ensor, Esq., of Ardress, county of Armagh, in a communication to the 'Magazine of Natural History' (vol. vi. p. 83), mentions a tenant's son having taken home a young cuckoo from a titlark's nest. "Two wrens who had a nest with eight eggs in the eaves, and just above the window fronting the cage in which the cuckoo was placed, made their way through a broken pane, and continued to feed it for some time." The cuckoo was at length taken away, when "the wrens repaired to their own nest, and brought out the eggs that had been laid:"—it is not stated how long they were absent from it. At Rockport, near Belfast, it was remarked, that when a young cuckoo had attained such a size that its foster-parents could not reach up food to it, they alighted on its back, and thus fed it. This proceeding was repeatedly observed from the windows of the house near to which the nest was situated. The cuckoo is occasionally heard to call through the night, when it is fine, though there may be no moonlight. When lying awake on a dark morning (May 8), I once noted its call to commence at half-past three o'clock.

In April 1834 I made the following communication to the Zoological Society of London:—
 "May 28, 1833. On examination of three cuckoos today, which were killed in the counties of Tyrone and Antrim within the last week, I found them all to be in different states of plumage. One was mature;—another (a female) exhibited on the sides of the neck and breast the reddish-coloured markings of the young bird, the remainder of the plumage being that of maturity;—the third specimen had reddish markings disposed entirely over it, much resembling the plumage described by M. Temminck as assumed by 'les jeunes tels qu'ils émigrent en automne' (vol. i. p. 383), but having a greater proportion of red, especially on the tail-coverts, than is specified in his description of the bird at that age. This individual proved on dissection to be a female, and did not contain any eggs

* Philosophical Transactions, vol. lxxviii.

† Researches in Zoology.

‡ Macgillivray's British Birds, vol. iii.

§ Jardine, Macgillivray.

so large as ordinary-sized peas. The stomach, with the exception of the presence of some small sharp gravel, was entirely empty, and was closely coated over with hair."

"Attention was called to this, that the hair with which it is lined might be observed. From its close adhesion to the inner surface of this stomach, and from the regularity with which it is arranged, Mr. Thompson was at first disposed to consider this hair as being of spontaneous growth; but part of the stomach having been subjected to maceration in water, and afterwards viewed through a microscope of high power, the hairs proved, to the entire satisfaction of Mr. Owen and himself, to be altogether borrowed from the larvæ of the tiger-moth, *Arctia Caja*, Schrank, the only species found in the stomachs of several cuckoos* from different parts of the north of Ireland, which were examined by Mr. Thompson in the months of May and June 1833.'" Proceedings Zool. Soc. 1834, p. 29.

An observant friend states that he found the remains of coleopterous insects in the stomach of a cuckoo examined by him, but whether at a time when its favourite caterpillars are not to be procured, he could not remember. An intelligent bird-preserved has remarked, that a kind of tough gelatinous fat is attached to the skin of the neck in the cuckoo, such as he has not seen in any other bird.

I have several times known young cuckoos to have been kept for some months, and in good health, until winter set fairly in, when, with two exceptions, they died. Of the survivors, one lived for more than a year at Cranmore, near Belfast, the residence of that well-known naturalist John Templeton, Esq. But it will suffice to give the particulars respecting another which was kept for a longer period at the same place, and of which the following account, greatly exceeding in interest any I have read, appears in the MS. journal of Mr. Templeton:—

"January 10, 1822. Last night the cuckoo which E. got from Mr. Montgomery on the 26th of July, 1820, died, in consequence of C. having hurt it with her foot on Tuesday last [8th]. Thus ended the days of this innocent little bird, whose engaging manners were the delight of the whole family and the admiration of strangers. It was fed generally on hard boiled eggs, and occasionally with caterpillars: it would sometimes eat forty or fifty at a time of those of the *Papilio brassicæ*; it however shewed a decided preference for rough ones, as those of the *Papilio urticæ*. A seeming treat was a little mouse about one quarter grown, which it would hold in its bill and beat against the ground or anything hard until the animal became soft, when it exhibited great powers of extending its throat and swallowing. What however was most extraordinary, it was never known to take a drink; though when presented with a drop of water at the end of a finger or straw it would sip it, and seemed to delight, when seated on its mistress's or other person's hand, to put its bill to their mouths and sip saliva. It delighted very much in heat, and sitting in the sunshine; and as its feathers were so

* The stomachs of all these were coated with hair like the one described.

much broken by its striking them against the furniture that it could fly but very imperfectly, it was apparently very thankful to any person who would help it up on the first sash of the window. At other times it sat upon the fender, turning itself in various directions and spreading its wings and feathers to receive the heat, of which it could bear a temperature equal to 100 degrees for a considerable time with seeming satisfaction. During cold weather it slept at its mistress's bed-side, covered with a piece of flannel, which was well warmed previous to its going to rest. With this attention it generally remained quiescent until morning; but on feeling cold sometimes presumed so far as to creep under the bed-clothes. It was only to those from whom it had received some hurt or persecution that it expressed dislike or fear, which it did by raising its neck-feathers and putting itself into an attitude of defence. It never uttered the cry of the male—cuckoo—but sometimes, when persons in the room were laughing, it would apparently join, and emit a noise somewhat like the barking of a little dog. At all other times the only sound it made was a kind of low chattering, expressive of pleasure when it got into a warm place, or on seeing its mistress after she had been absent for some hours. It received the unlucky tramp which finally killed it, by having lost too much the apprehension of injury."

From Miss Templeton I have learned the following particulars respecting this cuckoo:—It moulted only a few feathers the first year about Christmas: the following year, about the same period, moulting commenced, and the bird became so unwell that fears for its life were excited. Some of the adult plumage was then exhibited, but before there was time for this to be perfected the poor bird met with its accidental death. This cuckoo was never subjected to the confinement of a cage, but was kept in the parlour through the day, and taken to its mistress's bed-room at night. A hairy species of caterpillar found upon the oak was its favourite food, being better liked than the hispid one of the nettle butterfly; but of either of these it would eat voraciously, and fully three times as many as of the smooth caterpillar of the cabbage:—the last it would not consume at all if the others were to be had. Every caterpillar was viscerated by the bird previous to being swallowed, as likewise were the mice when young enough for this process: these were always swallowed head foremost, and for a considerable time afterwards their tails appeared dangling from the cuckoo's bill. When the season was too far advanced for caterpillars to be procured, this bird was fed on raw flesh-meat, and seemed to gain much strength in consequence: with this and hard-boiled eggs it was supplied throughout the winter. It never consumed less in a day than a couple of eggs, in addition to a little of some other food. It is described as appearing to be deficient in the power of picking up little fragments of anything, such as bits of egg, &c., and to the last gaped to be fed with all but caterpillars, or in other words, its natural food. It was remarkably sharp-sighted, and if a caterpillar had escaped would perceive it from the opposite side of the room, and with the utmost rapidity dart at and seize it.

This bird was presumed to be a female from its note: it was originally taken from a titlark's nest. Montagu, in the supplement to his 'Ornithological Dictionary,' gives so full and interesting an account of a cuckoo which he kept, that a portion of the above is but a counterpart of his narrative. It seemed to me, however, that all particulars respecting Mr. Templeton's bird were well worthy of being recorded.

In Holland I have heard the call of the cuckoo in the king's park at the Hague towards the end of May, and in Switzerland, late in June. Its well-known cry was most gratifying to my ear, when on the 16th of May last riding over the bare and wild hills and through the forest between Constantinople and Belgrade*. When about Navarino on the 28th of April, a small flock of seven or eight birds which were believed to be cuckoos flew near to me, proceeding in a northerly direction, but the call was wanting to prove the species.

YELLOW-BILLED AMERICAN CUCKOO, *Coccyzus Americanus*, Bonap.†

The first notice of the occurrence of this species in the British Islands, and indeed in the Eastern hemisphere, is due to Mr. R. Ball of Dublin, who contributed a note upon the subject to the first number of the 'Field Naturalists' Magazine.' He states, that when at Youghal (co. Cork) in 1825, the butler of a neighbouring gentleman brought him a specimen of this bird a few minutes after its being shot, and when still warm and bleeding. In the same communication, dated from Dublin Castle, Oct. 20, 1832, Mr. Ball mentions a second example as having been recently killed near Bray, a few miles from Dublin. About the same period ("autumn 1832") one was shot on the estate of Lord Cawdor, in Wales. Mr. Yarrell mentions his having received a communication respecting the occurrence of another, in Cornwall, but no date is given. ('Br. Birds,' vol. ii. p. 190.) These are, I believe, all the recorded instances of the species having been met with in the British Islands. The last two parts of Temminck's 'Manuel,' published in 1835 and 1840, do not contain any notice of its appearance on the European continent.

The specimen obtained near Bray was shown to me by Mr. Glennon, bird-preserved, Dublin, and I agree with Mr. Ball in considering it identical in species with his own. This was, with that gentleman's usual liberality, entrusted to me when about to visit London in the spring of 1835, when I compared it with the specimen presented by Lord Cawdor to the British Museum, and found them to be of the same species. Before leaving home I had purchased in Belfast a yellow-billed American cuckoo from a person who had shot it at Long Island (United States), and at a meeting of the Zoological Society exhibited this bird and Mr. Ball's for the purpose of showing their specific identity.

* The Belgrade of Lady Mary Wortley Montagu.

† See Temminck's 'Manuel,' part 3. p. 277, for remarks both on the generic and specific names.

It was considered desirable to look as critically as possible to these birds on account of the singular fact of their appearance in this hemisphere. Ornithologists can hardly believe that they crossed the Atlantic. Temminck conjectures that this cuckoo must breed in the north of Europe, whence the individuals migrated to the British Islands. But our knowledge of their occurrence here only, and in the more western parts (Ireland, Wales, and Cornwall), in addition to the fact, that at the very period of their being met with the species is (as we learn from Wilson and Audubon) in course of migration in the western hemisphere, seems to me presumptive evidence of their having really crossed the ocean. So far north as Labrador, Audubon has seen this bird in summer.

ROLLER, *Coracias garrula*, Linn.—See ‘Annals,’ vol. vii. p. 478.

THE BEE-EATER, *Merops Apiaster*, Linn., has very rarely been met with in Ireland.

Dr. J. D. Marshall of Belfast, in a communication to the ‘Magazine of Natural History’ (vol. ii.) dated July 1829, stated that one “was killed in the county of Wicklow a few years ago.” Dr. R. Graves of Dublin, in a letter addressed to a mutual friend in Belfast, mentioned in November 1830, that he had known three bee-eaters to have been obtained in the interior of Ireland, one of which was shot by Mr. Tardy, an eminent entomologist in the metropolis, who on opening the stomach found it to contain many bees. It is doubtless the same individual that is alluded to by Mr. Vigors in the ‘Zoological Journal’ (No. 4. p. 589) as being in the possession of the last-named gentleman; but in this communication it is stated to have been shot “on the sea-coast, near Wexford, in the winter of 1820”(?) In March 1833 I saw one of the specimens alluded to by Dr. Graves, in his own collection.

As noticed in the ‘Magazine of Natural History’ (vol. ii. p. 18, new series), I had the opportunity of examining in a recent state, the only one of these birds yet recorded as obtained in Scotland. It was stated to have been shot on the 6th of October, 1832, by Capt. James McDowall, 2nd Life Guards, at his seat near the Mull of Galloway; and it was sent to Belfast by my friend Capt. Fayrer, R.N., to be preserved, and set up for that gentleman.

I have had the gratification of seeing the bee-eater in scenes with which its brilliant plumage was more in harmony than in the British Isles. It first excited my admiration in August 1826, when visiting the celebrated grotto of Egeria, near Rome. On approaching this classic spot, several of these birds, in rapid swift-like flight, swept closely past and around us, uttering their peculiar call, and with their graceful form and brilliant colours proved irresistibly attractive. My companion, who as well as myself beheld them for the first time, was so greatly struck with the beauty of their plumage and bold sweeping flight, as to term them the presiding deities over Egeria’s Grotto. Rich as the spot was in historical and poetical associations, it was not less so for its pictorial charms—all was in admirable keep-

ing;—the picturesque grotto with its ivy-mantled entrance and gushing spring; the gracefully reclining, though headless white marble statue of the nymph; the sides of the grotto covered with the exquisitely beautiful maiden-hair fern in the richest luxuriance; the wilderness of wild-flowers around the exterior, attracting the bees on which the *Merops* was feeding; and over all, the deep blue sky of Rome completing the picture.

In the 8th volume of the 'Annals' (pp. 127 and 128) will be found a particular notice of some bee-eaters which in a very different scene afforded much gratification to all who beheld them, as they perched during migration on the stern-rope of H.M.S. Beacon, when near the Morea, at the end of April 1841.

THE KINGFISHER, *Alcedo Ispida*, Linn., is at least occasionally to be met with in suitable localities throughout the island. It is a species nowhere numerous. As many of these birds would seem to be distributed over districts favourable for their abode in Ireland, as in any other country.

The kingfisher is said generally by British authors to be partial to clear streams, but to the correctness of this remark its haunts around Belfast will not bear testimony. Here are streams, which, though not on a grand scale, partake more or less of every natural character, and gently flow or wildly rush through scenery the most varied; yet the deep, muddy, and sluggish Lagan is its favourite haunt. About waters of every description it may sometimes be seen, not excepting the deep and unpicturesque brick-pits, about which no tree or shrub appears.

There is decidedly a partial migration or movement of these birds. To ponds at our own residence in the country, contiguous to the mountains, and elevated 500 feet above the sea, they came regularly every year about the same time in the month of August, and remained generally for about six weeks—once only were they seen in winter. Their first appearance in the year 1831 was on the 4th of August; in 1833 on the 14th; 1834 the 14th; and 1835 the 17th of that month*. Although more frequently solitary, two were occasionally seen in company, and in one instance three, of which a couple were, from being less brilliant in plumage, and slower in flight than the other, believed to be young birds. Their usual haunts are the willowed banks of ponds, one of which is not more than thirty yards distant from the dwelling-house. At little more than this distance we were once amused on observing from the windows a kingfisher perched on the handle of a spade, and looking a miserable object from its being "all droukit" with heavy rain. It did not betray any shyness, though several persons passed within about a dozen paces,

* Intelligent persons resident on the banks of the Lagan, near Belfast, state that kingfishers appear there in the autumn and remain until March, when they disappear. This accords with the observation of Mr. Weir, who, writing from Linlithgowshire, remarks—"In my neighbourhood kingfishers are never seen before the beginning of September, and they usually disappear about the end of March. They then retire to the river Avon, where they breed." Macgillivray's Brit. Birds, vol. iii. p. 679.

but remained on this graceless perch* for about an hour, until it was driven away by the owner of the spade going to resume his work. This trivial circumstance is mentioned in connexion with the chosen haunts of the kingfisher at this locality, as some writers have described it to be a wild and unapproachable bird, avoiding the vicinity of human dwellings. I have never found it so. A relative, who has bestowed much attention on the species, has been surprised by frequently observing it alight in beds of reeds unapproachable to him from growing on oozy banks, whence he could not again raise it either by shouting or the throwing of stones. But when much persecuted it fortunately becomes wild, as its splendid plumage renders it a valued object of pursuit to the juvenile shooter. To my great regret I was myself once guilty of the death of a kingfisher, but under extenuating circumstances. During frost which succeeded a heavy fall of snow, I was in pursuit of woodcocks and snipes along the partially wooded banks of a rivulet, when a small bird of a peculiar appearance was sprung two or three times as we advanced, and always within shot; at last I fired at it, and to my astonishment, on going to the spot where it fell, found that it was a kingfisher. All sportsmen must have remarked the changed aspect of birds rising against a snowy background, but would hardly be prepared, as in this instance, to see a kingfisher lose all its brilliancy, and assume a hue, dark and sooty as the water-ouzel; yet such was the fact. Had it not appeared under false colours, the trigger would have been untouched. Its mode of flight should certainly have indicated the species; but over this, unfortunately, the negative character of the absence of its wonted beauty prevailed. Besides, it is not the snow-clad landscape that should bring to mind the kingfisher, whose vesture under ordinary circumstances rather suggests the torrid zone than the arctic circle.

Mr. Yarrell observes that the kingfisher is "a difficult bird to shoot on the wing;" but from its usual flight being direct, like that of the water-ouzel and quail, I should call it easy:—this will, however, depend on the individual shooter—it is to be hoped that those who follow the bird with evil intent will find that it is "difficult" to be shot. Occasionally, both in summer and winter, I have seen a couple of kingfishers, apparently in playful mood, describing graceful curves after the manner of the sandpiper (*Totanus Hypoleucos*), as they flew gently over the surface of the water. Their splendid plumage was at the same time displayed to the most advantage, and they gave forth their peculiar shrill and piping call. This resembles more that of the sandpiper than any bird with which I am acquainted, but may perhaps be termed louder, hoarser, and not so shrill.

This species has already been mentioned as resorting to an upland locality in the month of August, and remaining there through September; after which period and through the winter it is to be met

* I have seen the kingfisher perched on the not more picturesque brick-bat, and on the mud of the river.

with about the streams and rivers of the lower grounds, and occasionally about the estuary of Belfast-bay. A couple of them were remarked by my observant friend Mr. James Garrett, throughout the month of January 1836, to frequent the river Lagan where subject to the flow of the tide, and he has known them in pursuit of food to be immersed for a few seconds beneath the surface of the water; about another river where it enters the bay, three or four have been seen in company: in shallow pools of sea-water this bird has been remarked at ebb-tide fishing in its most picturesque manner—suspended above the water, and darting down upon its prey. This mode must necessarily have been resorted to here, where there was no branch of a tree or perch from which the bird could be on the look-out; but on rivers with wooded banks it occasionally fishes in the same manner. My brother notes his having seen the kingfisher dart down upon its prey from a branch fully six feet above the water. I remember being once entertained by observing one of these birds perched on a branch overhanging a pond, and about a foot above it, whilst trout, one and all too large for its mastery, kept leaping up immediately beneath as if in defiance of their enemy. A gentleman once informed me, that beside the nest of a kingfisher he had found the perfect skeleton of a fish, which induced him to believe that the bird does not swallow the fish whole, but picks the flesh off. That such however is not the case, the stomachs of the few—six in number—which I have myself examined, sufficiently attested, as they all contained fish-bones, and these only. The two before alluded to as frequenting the Lagan within flow of the tide in January 1836, fell victims to the gun at the end of that month, and were found on dissection to have their stomachs filled with “shrimps” about an inch in length.

In the winter of 1830–31, a bird-preserved in Belfast received so many as seven kingfishers in the course of a month—of these, three were shot at the Lagan*, one near Downpatrick, and two or three at the Six-mile Water, a fine clear trout stream, and one of the tributaries of Lough Neagh. Within about a month on another occasion, from the middle of October to that of November, I saw seven of these birds which had been sent to taxidermists in the town just mentioned—of these one was from the last-named river, as were single specimens from the Inver, at Larne, and the Milewater, in the county of Antrim; one from Killileagh (co. Down), and three from Coleraine (co. Londonderry). Mr. R. Davis, Jun., of Clonmel, has informed me, that during one week in January 1841, he received six examples of this bird—the extreme cold of that month will be remembered†. All these are remarkable cases.

* On the 21st September, 1833, kingfishers were said to be plentiful about this river; four were seen together on a bank of gravel, and on being frightened away flew in company up the stream; about a mile below where they were first seen, my informant proceeding onwards saw two more: for so many to appear within so limited a space is extraordinary.

† “In severe winters they sometimes become so tame that they even venture within a few feet of the door of Bathgate Mill, which is situated in the immediate vicinity of houses.” Mr. Weir in Macgillivray’s *Brit. Birds*, vol. iii. p. 679.

My friend Richard Langtry, Esq., when grouse-shooting at Aberarder, in Inverness-shire, in the season of 1840, met with a kingfisher several times, from the middle to the end of September, about a wild mountain-rivulet at a considerable elevation, and whose banks were destitute of wood or any cover. In the middle of August I once saw three of these birds in company at the Pontine marshes between Rome and Naples.

Mr. Waterton, in his 'Essays on Natural History,' treats of the kingfisher in a most pleasing manner.

[To be continued.]

XXVIII.—*Organographic and Physiologic Sketch of the Class Fungi*, by C. MONTAGNE, D.M. *Extracted from 'Histoire physique, politique et naturelle de l'île de Cuba,' par M. RAMON DE LA SAGRA, and translated and illustrated with short notes by the Rev. M. J. BERKELEY, M.A., F.L.S.*

[Continued from p. 116.]

Pyrenomycetes, Fries.

THIS family is one of the largest in the class Fungi. Its essential characters are, 1st, a mucilaginous, deliquescent, rounded, never disciform nucleus, containing little convergent utricles (*asci*) mixed with continuous or septate threads (*paraphyses*), and containing sporidia; 2ndly, receptacles, either real (*perithecia*) or formed by the matrix or stroma, destined to contain the nucleus. These fungi are to the *Discomycetes*, what *Verrucariæ* are to *Lecidineæ* amongst Lichens.

It would be difficult to conceive the prodigious variety of forms which the perithecium and sporidia assume in the descending series of genera and species in this family from the genus *Hypoxyylon* to *Saccidium*.

I regret that I have not space to consider these as fully as in the foregoing families. I must confine myself to what is indispensable to give a general notion of the group.

The family of *Pyrenomycetes* is divided naturally into two principal tribes (Fr. Fl. Scan., p. 345): 1. *Sphæriaceæ* characterized by the presence of asci; 2. *Perisporiaceæ* by the absence of true utricles, which are, however, sometimes represented by little transparent sacs. We will examine in succession the stroma, perithecium, sporidia, &c.

The perithecia, simple, scattered or aggregate, are sometimes connected by a byssoid web or by a carbon-like substance, which is called *stroma*. This when present is extremely variable in form; it is vertical and centripetal, or horizontal and centrifugal. The vertical stroma (*caulescens*) is orange or black, carbonaceous, corky, fleshy or woody, coriaceous, flexible or brittle, smooth or pubescent, even and polished, or else rough and warty, generally cylindrical, branched and dichotomous or simple, and then inflated with a capitulate or clavate apex. In this last case it is called stipitate, and the